

Transcript for “Annareli Morales, an Air Quality Policy Analyst with the Weld County Department of Public Health and Environment in Greeley, CO”

Clear Skies Ahead: Conversations About Careers in Meteorology and Beyond

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Kelly Savoie:

Hello, Clear Skies Ahead listeners. This is Kelly Savoie and I'm hoping you can take a moment of your time to rate and review our show wherever you listen to podcasts. We have produced over 60 episodes, and you can help us reach even more individuals that will benefit from the diverse experiences shared by our guests. Thanks so much for listening, and I hope you enjoy this new episode. Welcome to the American Meteorological Society's podcast series Clear Skies Ahead, conversations about careers in meteorology and beyond. I'm Kelly Savoie, and I'm here with Emma Collins and we'll be your hosts. We're excited to give you the opportunity to step into the shoes of an expert working in weather, water, and climate sciences.

Emma Collins:

We're happy to introduce today's guest, Annareli Morales, an air quality policy analyst with the Weld County Department of Public Health and Environment in Greeley, Colorado. Welcome, Annareli. Thanks so much for joining us today.

Annareli Morales:

Thank you. Thanks for having me. Hi, Emma. Hi, Kelly.

Kelly Savoie:

Annareli, could you tell us a little bit about what sparked your interest in meteorology and how it influenced your educational path?

Annareli Morales:

Sure. I don't have an event that triggered my meteorology interest. I didn't even know it existed that that was something you could study. But I always have been curious about the environment, looking at the sky, looking at the ground, looking at animals. And then when I was in grade school and high school, I really enjoyed my science classes and my math classes, but I didn't really have a thing until I went to college and I just happened to go to a major-minors fair because I was undecided in my major and I met the undergraduate advisor for the atmospheric science program, and they're the ones that basically convinced me, hey, this might be a good idea. Before that, I was interested in geology as a major, but yeah, I ended up doing both. So I have a bachelor's degree in atmospheric science and geology with an earth and environmental science concentration. So I really liked looking or learning about the atmosphere, learning about the ground, and then how do those two elements interact and affect us or how do we affect them.

Kelly Savoie:

That's interesting that you decided once you were in college, so it's lucky that you picked a school that actually had an atmospheric science for a meteorology degree because there aren't many that have that, so that just worked out well for you.

Annareli Morales:

Yes, I did not know what I wanted to do, and so I applied to a couple schools in Illinois where I'm from, where my friends were going, and so luckily my friends knew what was going on and what they were doing, so I followed them to the University of Illinois in Champaign. And I guess my thought process was it's a pretty big school, it's a really good school. They have a lot of different programs, so I'm bound to find something, and I did.

Emma Collins:

And what opportunities did you pursue that you knew would be beneficial to securing a job in your desired profession once you did make that decision about your degrees?

Annareli Morales:

Again, it varies because, making the job that I want, which is the one I have now, I didn't know I wanted this job till two years ago. And so really I started... The first thing I wanted to be was a forecaster or a broadcast meteorologist. I didn't know that's what they were called, but so I could be presenting the weather in Spanish because my family is from Mexico and my first language is Spanish. And so that's what I was really interested in. But then as I took opportunities like internships, so I participated in the SOARS internship at National Center for Atmospheric Research, and that I just followed... There were people that saw something in me during class or wherever that would push me and say, "Hey, you should really apply to this. You got nothing to lose." Okay, fine. So the whole way, I was just kind of going along.

So I'm just really lucky that I had really great people around me that supported me and that I guess listened to their thoughts and opinions. But yeah, I guess once I figured out, hey, maybe I want to be a professor or a researcher. I'm not sure, let's go to grad school. So then the opportunity to go to grad school was something I pursued. And then at grad school at CSU, I tried different experiences. So I did teaching and I did outreach at different stages of school, so high schoolers or kindergartners, and learned a ton of different things. So, looked into different subtopics, but eventually, I realized I really, really liked atmospheric chemistry and cloud microphysics because they're really complicated, but it was really, really interesting to me. It might've also been a contrarian thing because, in my undergrad, people weren't very excited about those two topics.

And so I decided to be excited about those two topics. Everybody else wanted to go storm chase, and I don't really care for that. The pictures are nice, but I don't want to go and then just attending conferences. I guess moving along in my grad school career, I realized you need to know people. And also learning the behind-the-scenes, how the AMS works, how do you put together a conference. So yeah, I did a lot of volunteering in committees with the AMS or at my grad school and just started collecting a giant network of people that I could rely on in the future. Yeah, I think that's it.

Kelly Savoie:

So for our listeners who aren't familiar with the SOARS program, could you just give us a little brief intro of what that is?

Annareli Morales:

Yeah, it's the, let me get this right Significant Opportunities in Atmospheric Research and Science. It's an internship program funded by the National Science Foundation at NCAR. And the really cool thing about this internship is that you can come back multiple summers. So you come in or if you get accepted for the first summer, you can try a research project. If you really, really like it and you mesh well with your advisors, maybe you can come back next year and continue the work or they can help you develop ideas

for your master's degree or PhD. And they also focus on professional development. So they teach you how to write, how to think, I guess, scientifically, how to pose a hypothesis, how to present your work both in presentation orally or in a poster format. And it's really just a cool opportunity to meet other students that will be your peers in the future. And absolutely the people that I've met in that program I still talk to and we still try to make changes in atmospheric science together.

Kelly Savoie:

That sounds awesome. So is it a whole summer and you actually moved to Colorado to participate in it?

Annareli Morales:

Yes. My first summer was in 2011, and yeah, I was living in Champaign and I went to Boulder, Colorado and I stayed there. They paid for us to travel there. They paid for us to work, to do the work, and they provided lodging. So it was pretty great. You just had to show up and be ready to work and to take everything in. And for me, the first summer I did a project on atmospheric chemistry, specifically looking at ozone, and it was really cool and really fun, but I realized there weren't any clouds involved, and then I needed more water. And so the next summer I tried cloud physics, and that was really cool. And I started learning about numerical models and microphysics parameterizations and all this good stuff, and that really, I gravitated to that.

Kelly Savoie:

Oh, that sounds amazing. So what was your first job in the field, and how did you end up where you are today or is this your first job in the field?

Annareli Morales:

So it's hard to say because to me, going to grad school for my master's degree, that was the job because I was getting paid for it. So I would maybe informally, I don't know—say it's a graduate research assistant, that was my first job in the field, but I was still being trained and learning. But post-school career, again, I was a postdoc. That is a job, but it's an in-between place. I don't know how to explain it, but I guess my actual first job, it was as a research scientist at the Cooperative Institute for Research and Environmental Sciences, I believe in Boulder at the University of Colorado. And yeah, I did a lot of research on precipitation over mountains and large-scale weather patterns that impact snow over mountains.

Kelly Savoie:

And so how long were you there before you moved on to your next position?

Annareli Morales:

I was there for maybe a year and some change. I can't even remember. It was all a blur, but then, yeah, I realized it was not a good fit for me. I thought that something... That being a research scientist was something I wanted to do, and I am good at it. It was just not the best for me and my maybe mental health. And so I started reaching out into well, what else can I do? And asking just randomly on social media, "Hey, does anybody know a good, that would fit me?" Just vague.

Emma Collins:

That's a network. Yeah, reaching out to your peers.

Kelly Savoie:

Yeah, good old social media. I mean, that's awesome.

Annareli Morales:

Yeah, and so luckily, shout out Anna Hodshire. She connected me with someone that then connected me to my boss, and luckily my boss at the public health department gave me a chance. And I started the first year as a, I guess training to become an air quality policy analyst as an environmental health specialist. And once that first year was up, they realized, actually, you're really good at this and you're learning really quickly and we would like to keep you obviously, so here's a promotion. So yeah, that's where I am now.

Emma Collins:

And how did your work as a resource scientist benefit you in your role as an air quality policy analyst? Excuse me.

Annareli Morales:

Yeah, I guess thinking now because, again, this is not a job that I thought I would do, ever. I never thought I would work in the government or local government, but some of the things that have benefited me have been from having been trained as a PhD, learning how to learn, learning how to do research, and then as a research scientist literature review, that is one of the biggest components or parts of being research scientists that I still use. So there's a lot going on in air quality. I don't know everything, and I know about it. I know what air toxics are and ozone and nitrogen, but I would need to learn more about that specific topic that is of importance this year. So literature review is really important for me. Basically knowing how to read a paper is super important and a skill that not many possess within local government per se.

And the connections that I have with experts in atmospheric science have been super helpful for when I don't know something and I maybe am still not understanding and I can reach out to them and have them explain something or, hey, do you know of a really good paper that could help summarize this? Or a review paper on ammonia, and then they're really helpful and they'll send stuff over. And then understanding scientific tools like numerical modeling and various observation techniques. That has been very helpful in my job because there's a lot of things, scientific terms and things that get thrown around when we're developing policy at the state level or regulations. And it's very helpful for me or for my boss that I know what those things are and that I actually know how those things work and I can ask very specific questions about the modeling.

Kelly Savoie:

What are some of the main duties? What does an air quality policy analyst do?

Annareli Morales:

It's hard to explain, but okay. In general, I am a resource on air quality to everyone in Weld County. So all our 300,000 plus residents can use me as a resource if they have questions on air quality. Our businesses, even more, local governments, so cities and towns, if they have questions, I'm here for them. So there's that part. But I'm also here to provide expert recommendations and feedback to the board of county commissioners who are the elected officials that make policy decisions on behalf of the residents of the county. So I make sure that I have all the information I can gather, all the perspectives from

different angles, and then taking into account the economics and the current needs or priorities of our communities and provide some sort of recommendation on making decisions and on a day-to-day basis, I attend a lot of meetings. I take a lot of notes, and I ask a lot of questions.

Kelly Savoie:

So what are some of the strategies that will help Weld County meet its climate greenhouse gas reduction goals and ozone attainment?

Annareli Morales:

So the state of Colorado has climate targets, or by a certain year, they want to have a certain reduction in greenhouse gases, and that's across all sectors of the economy, I suppose. And that goal has resulted in legislation and regulations that then can potentially affect our residents or the businesses in our county. And so I guess the strategy we use is data-driven decisions. So we would take the approach of if the state's going to do something, then I'm going to be there to scrutinize it and critique it and making sure that it's looking at the data, it's practical. It's not a one-size-fits-all solution, especially in Weld County. We are very, very big. It's 4,000 plus square miles, and a lot of it is rural. And so some of the solutions that could work in urban areas like Denver may not work or may actually negatively impact our communities in rural areas. So just making sure that whatever we end up doing is actually going to work and then once it's implemented, figuring out did it work and adjusting as needed.

Kelly Savoie:

So what would be an example? I mean, when I think of these things, I think of car emissions and things like that, or if somebody is trying to get a permit to build something or that there's certain regulations that they have to meet. So is it something similar? It's like that, right?

Annareli Morales:

Yeah. So in Colorado, the state is the one that develops all these regulations, and then the county government follows whatever's in the statute. But yeah, a strategy for Weld County is emphasizing incentive programs, and so making sure that whatever incentive programs are available to, for example, switch your lawnmower to an electric lawnmower, we do have an incentive program. You can buy one at certain retailers and you can get 30% off at the cashier. And so making sure that our public is aware of these opportunities for them and that we're all working together.

Kelly Savoie:

Yep. Completely understand that. In Massachusetts, we have something like a Mass Save program where they give you credits or interest-free loans if you change your heating system and things like that.

Annareli Morales:

Yeah, the state during the summers, I don't know if they'll have it this year, but they've been having zero fare for clean air. So there's certain month or months in the summer where it's the high ozone season where it's free to ride public transportation, so the trains and the buses.

Emma Collins:

Oh, nice.

Annareli Morales:

Yeah, just trying to encourage people to take transit and drive less.

Emma Collins:

That's awesome. I wish they did that in Boston.

Annareli Morales:

I don't know if they have enough money for all those folks.

Emma Collins:

Fair. So you also work on environmental justice and language assistant planning for the county. Could you tell us a little bit about that?

Annareli Morales:

Yeah, so I guess the way I have framed it is environmental justice is commitment to good government. You're making sure that you're maximizing the benefits and minimizing the burdens on your constituents. And in doing that, you want to make sure that folks can access the services that are available to them and when they need them, and provide input on decisions that could impact those services. So our environmental justice plan focuses around community engagement. How do our residents want to get informed? What's the best format? Is it an email? Is it a text? Who do we need... Basically, yeah, what do you want to hear more about? And letting them know, these are the job, or this is the responsibility of the county. And then these things are the responsibility of the municipality. So there's a lot of differences that I didn't know before this across jurisdictions. So in Weld County, the public health department is for everyone, but other services that we provide are only for the unincorporated part of Weld County, which is a lot, but it's not as many people.

However, I guess within the public health department, because we are here for everybody in the county, we know that there's a high... Like a third of the population in Weld County is Hispanic or Latino, and many of our customers speak Spanish. So it just makes sense. It's good customer service, good government to have a language assistance plan and make sure that we have the vital resources, that they're accessible in a language that our customers or clients can understand, and that they can communicate with us the issues that they're seeing or at our clinic. If you're sick, what do you feel? So yeah, that's it.

Kelly Savoie:

And does your department or where you work, do you give out the notifications if the air quality is poor and things like that or do you just work with another organization that does something like that?

Annareli Morales:

Yeah, so the air quality alerts are put out by the state. The state has a Department of Public Health and Environment, and within that, there's an air pollution control division. And they're the ones that they have meteorologists that are figuring out, okay, what's the forecast for tomorrow? Is there smoke that's going to affect certain regions? Do we have... I think yesterday we had an advisory for visibility because it was really hazy. And then those have some recommended actions attached. Depending on the alert, they might also have required actions like no open burning or something because it's really, really bad out there. But yeah, I guess our health department is responsible for educating the public on these

resources. And for me specifically, because I'm a policy analyst, I'm trying to make sure the public knows what I'm doing.

If I'm at the Capitol talking about testifying for a legislation or something, why am I doing that? And I am participating in committees or what have you, they need to know that even if they can't participate because they have busy lives, I am here participating on their behalf. I would love to see more engagement and I guess participation from our residents but from my perspective, the priorities of our county are a little different than other counties whose residents do participate in meetings for the Air Quality Council.

Kelly Savoie:

And getting back to education and outreach, you were involved in field campaigns in Argentina. How did you get involved in that?

Annareli Morales:

I pestered a bunch of people for a while. So there is a project called RELÁMPAGO. No, I'm not going to be able to remember what that says, but it was a giant study of thunderstorms and severe weather, and lightning in Argentina. And I knew a lot of the PIs, the principal investigators. And so anytime I saw one, I'd just plant the seed of, "Hey, by the way, I speak Spanish if you would need anyone to go down there and help." And so all these folks knew that I had experience with public education, communication, development on educational materials, or hands-on activities.

So eventually I think it got to the right ear and at the right moment when they were figuring out budgets and who's actually going to go, and that's when I was invited to go to help. Part of my time was helping the education outreach team, and the other part was doing observations, so going out on the field and taking measurements, launching weather balloons. So yeah, that was kind of random, and I was lucky that my PhD advisor said, "Yeah, sure, you can go." Even though this project had nothing to do with my own PhD research. So it was really just, "Hey, could I go on sabbatical for three weeks to Argentina?" And he was like, "Yeah, that's fine."

Kelly Savoie:

Oh, that's great. Yeah. How did you find out about that opportunity? Was it through your university?

Annareli Morales:

Yeah, I think I was at conferences. So I attended the Mountain Meteorology Conference, and they started talking about it, or the Mesoscale Meteorology conference. And a lot of the PIs were from CSU or University of Illinois. And so I have connections there because that's where I went to school, so I kept hearing about it, or friends that were part of the campaign would talk about it and say, "Oh, man, yeah, I got to do this because we're getting ready to go to Argentina." so from people."

Kelly Savoie:

And you're like, "I want to go." Had you ever been before?

Annareli Morales:

No, that's the first time I went to the Southern Hemisphere and to Argentina though, I was saying, "Hey, I speak Spanish, I can help." My Spanish was somewhat helpful, but the Spanish in Argentina is incredibly different, and the culture is incredibly different compared to Mexico. So I still felt a little culture shock.

Kelly Savoie:

Yeah, I'm sure you were better off than some people who don't know any Spanish though. So you had a leg up.

Annareli Morales:

Yes. Yes.

Emma Collins:

That networking and persistence paid off. What is it? It's like four seconds of courage, just ask, what can you lose?

Annareli Morales:

Oh, yeah. I always do cold emails, and I'm not afraid to call someone or to just email them, "Hey, what's up? I'm Annareli, I do this. I heard that you're doing that. Can I help?" Or, yeah, just talking to people. It is scary. And then for a long time, I didn't know how to do that or that I could do that, or that I had it in me to do that. But after a while, I guess I don't even know if I gained confidence. I just stopped caring of, oh, they're going to think I'm dumb, or that I'm asking a stupid question, or blah, blah, blah. And now my reputation precedes me for asking really good questions because I, at some point decided I'm going to try and ask more questions. And that's how I stay engaged in presentations and in meetings by taking notes and asking questions. Otherwise, my brain's just going to leave and I'm gone.

Kelly Savoie:

Well, you know what they say, knowledge is power. That's the way you should do it.

Emma Collins:

Yeah. And all the opportunities that it opened up for you asking these questions.

Annareli Morales:

Oh, yeah.

Emma Collins:

Do you have any tips or advice for students and job seekers looking to work in air quality at the local level?

Annareli Morales: Yeah, I would start with attending your local air agencies' meetings. So in Colorado, it's the air quality or air control pollution, or wait, now I forgot. Oh, Air Pollution Control Division. So in Colorado, it's the Air Pollution Control Division or EPCD that hosts a lot of public meetings, informational meetings on all sorts of things that they're doing. So that would be one way to just even listen in and see what are they talking about, what are the rules that they're doing and working on right now. Also, some cities might have air quality advisory boards. Those would be good to join and so if you have expertise and time, I would encourage you to volunteer as an expert in certain spaces.

And just in general, I highly, highly recommend to everyone to consider working in local government. And so that's state, county, or municipalities because, from my two years of working here, I've realized our expertise is very, very valuable. And if you want to make a difference, well, government is where you

do it. There's a lot of rules, regulations, laws. Like last year I helped put together a bill for our general assembly, and yeah, I was so proud of it and what I can do that? It didn't pass, but we learned a lot. And so yeah, just get involved in the government, I suppose. It sounds kind of scary, but you can just listen in and city council meetings or whatever. And then once you start getting more confidence or something, or there's something that really sticks out, you can start giving public comment, which is also scary. But yeah, so just get out there, be part of your community, and see what's going on.

Kelly Savoie:

Yeah, that makes sense to me because you can have all the experience and education in the sciences, but you really have to learn about how the local government works. And that would definitely benefit you if you had that experience and you were going for the position because otherwise, you'd be pretty lost.

Annareli Morales:

Yes, I was lost, and I am still lost sometimes as to how the procedure hierarchy of things. So yeah, if I have an idea and oh, I want to do a study on air toxics. Okay, well, what do we do? And my boss always forces me to sit down and what is the plan. You need to have a plan. It needs to connect with the bigger strategy of the department and where we're going. So I'm like, "Okay, fine." Because I get too excited and I have all these ideas. And my boss is always, he's like, "Oh, you're squirreling again." I'm like, "Yeah, I know I'll put it on the board." And then he comes back and we go through all the ideas and pick the ones that are slightly more baked than the others.

Kelly Savoie:

And so when these positions open up, where are they posted? Where would local government positions be posted? Where would someone go if they wanted a position in that area?

Annareli Morales:

I think it varies. For us, I think it's on Workday. I forget the full thing, but yeah.

Kelly Savoie:

Would local government positions be like at usagov.com?

Annareli Morales:

No.

Kelly Savoie:

They wouldn't be okay.

Annareli Morales:

No. You would either go directly to the local government's website and then look for careers or we're hiring or something, dig through it, and then they'd have the list of them. But to my knowledge, I don't know of a repository of these things. They usually post it on their own website or they have that Workday link. I think LinkedIn is also a good place, so if you don't have a LinkedIn profile, you should get on that and the other services that are out there for figuring out jobs.

Kelly Savoie:

Well, we're so grateful for everything you've told us about your career. However, before we go, we always ask our guests one last question, and I want to ask, what is your favorite hobby?

Annareli Morales:

My favorite hobby is cross-stitching. I absolutely love cross-stitching. I am obsessed. During the summer, I was going to shop at this local cross stitch store, so often and so regularly that one of my apps was telling me or was considering it as a bill, and they would say, "Hey, your bill's coming up for country crafts needlework. And I'm like, "Oh God. Oh no. Maybe I should calm down." But I love cross-stitching. I've learned a lot over the year from joining a cross-stitching club or group. So it's a lot of older ladies. We hang out and we eat snacks and cross-stitch together.

Kelly Savoie:

Sounds fun.

Annareli Morales:

It is fun. I love it. And so I'm getting married in August and I'm working on a cross stitch to represent our day and so the ladies were super excited and helpful on, "Oh, you should really do this. Oh, you should use this frame," and giving me ideas.

Kelly Savoie:

What's the learning curve for cross-stitching? Is it easy to pick up or is it kind of difficult?

Annareli Morales:

I'd say it is easy to pick up, especially if you're using this certain type of cloth. The holes are very easy and the grid is easy to see. Once you get more expert, you can change the cloth and then maybe you're using linen, but if you like to count, if you like threads and colors and you're not afraid to stab yourself in the finger, I suppose, multiple times... Most of my fingers have calluses from it. So eventually you don't feel it. If you want to do that, go for it but yeah, I think it's pretty, you can start, you can find a kit at a local hobby shop and just go for it.

Emma Collins:

Well, thanks so much for joining us Annareli, and for sharing your work experiences with us.

Annareli Morales:

Yeah, no problem. Thank you.

Kelly Savoie:

Well, that's our show for today. Please join us next time rain or shine. Clear Skies Ahead: Conversations about Careers in Meteorology and Beyond is a podcast by the American Meteorological Society. Our show is edited by Johnny Le. Technical direction is provided by Peter Killelea. Our theme music is composed and performed by Steve Savoie, and the show is hosted by Emma Collins and Kelly Savoie. You can learn more about the show online at www.ametsoc.org/clearskies, and you can contact us at skypodcast@ametsoc.org if you have any feedback or would like to become a future guest.